40p

Fortnightly 23 June – 6 July 1983

LOAD RUNNER

THE GALAXY'S FIRST COMPUTER COMIC

FIRST GREAT ISSUE

MIKE ROMAN'S TIME AS 'BYTE KILLER' IS FINISHING — THE LOAD RUNNER IS ABOUT TO BE BORN!

IT ALL BEGAN ONE MORNING IN LATE JUNE, WHEN MIKE ROMAN, MICRO MECHANIC, AND TROUBLE SHOOTER FOR LONDON REPAIRMEN, WAS DRINKING HIS LAST CUP OF COFFEE...

A REPRESENTATIVE FOR THE DELEGATION SAID THAT THEY WERE FIERCELY OPPOSED TO ANY ATTEMPTS TO FURTHER ERODE THE POSITION...

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in our amazing competition!

THE ARCADIANS ARE COMING

to WARP your MIND

CHRIS CROSS OF ULTRAVOX

gets the computer bug

...OF MICROS IN SOCIETY. THERE HAS BEEN NO RESPONSE FROM...

SORRY TO INTERRUPT YOUR BREAKFAST, MIKE, BUT THIS IS SERIOUS. REPORTS COMING IN FROM *SECTOR WEST ONE* INDICATE A COUPLE OF *ROGUE ROBOTS* RUNNING AMOK IN *DERRIDGES DEPARTMENT STORE.* THEY'VE GOT *WEAPONS* OF SOME KIND...

WEAPONS! BUT...

YEAH, I KNOW THEY'RE BANNED UNDER THE '92 *MANKIND PROTECTION SCHEME*... I'VE GOT A BAD FEELING ABOUT THIS ONE, MIKE.

'KAY, SAM. I'M ON MY WAY.

GOODBYE MR. ROMAN...

...HAVE A NICE DAY...

AND OUR SPEED IS 43·8 K.P.H.. TEMPERATURE 32°C. AND RISING; HUMIDITY NEGLIGIBLE AND LEAD COUNT 9 PARTS PER THOUSAND. THERE APPEARS TO BE SOME DISTURBANCE ON THE ROAD AHEAD AND I AM REDUCING SPEED ACCORDINGLY. HAVE A NICE DAY, MR. ROMAN.

C'MON, *GUYS.* YOU'VE HAD YOUR *FUN!*

HEY! THE *BYTE-KILLER'S* HERE!

SCRIPT— BILL SCOLDING
ARTWORK— PETER DENNIS
LETTERS— STEVE POTTER

SUDDENLY...

OVER HERE! MR. ROMAN...

'KAY! FELLAS, JUST DROP THE HARDWARE...

IF THAT'S THE WAY THEY WANT IT...

THE WHITE ROBOT MAKES ITS ESCAPE...

WAIT! IT'S NO USE RUNNING...

LOAD RUNNER

SECONDS LATER...
UP HERE, MR. ROMAN!

WIPE OUT

AT THE TOP, MIKE PAUSED BRIEFLY...

...AND THEN ENTERED.
WHAT?!
I KNOW THIS PLACE! IT'S LIKE... NO, IT CAN'T BE!!
MR. ROMAN...

WELCOME TO THE MACHINE!

GOODBYE, MR. ROMAN, I HOPE YOU HAD A NICE DAY!
NEXT ISSUE: LOAD RUNNER ARRIVES!

The affordable FORTH

FORTH	: A full implementation of this very fast running language. Ideal for writing fast moving arcade type games. Allows the full colour and sound facilities of the Spectrum to be used. Future Microdrive enhancements will be made available. 48K Spectrum only.		14.95
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Mazeman	: A fast action m/c game that reproduces the spirit of the original. The Spectrum version includes excellent graphics and sound. 16K ZX81 & 16/48K Spectrum.	ZX81 4.45	4.95
Adventure 1	: Based on the original game by Crowther, this game was the start of the Adventure craze. Reviewed Sinclair User.Iss.2. Features Save game routine as the game can literally take months to complete. 16K ZX81 & 48K Spectrum.	ZX81 8.95	9.95

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LR1

Welcome to LOAD RUNNER

THE GALAXY'S FIRST COMPUTER COMIC

WELCOME to the first printout of LOAD RUNNER, the galaxy's first computer comic.

I am the CONTROLLER, and it is my function to ensure that each fortnight we input the finest story-programs and fact routines.

Every possible check will be made to ensure the output will be of the highest quality but YOU are the judges. If there is anything good or bad you want to say, write to me. I will award three pounds for every letter printed.

Also write to BRAINY (see program 27), who has the knowledge to solve even the most awkward computer problem, whether it be a programming poser or a question on how to persuade your father to buy you a printer.

Be sure to buy every printout of LOAD RUNNER — remember to order it from your newsagent — because there will be fabulous prizes to be won in our special competitions.

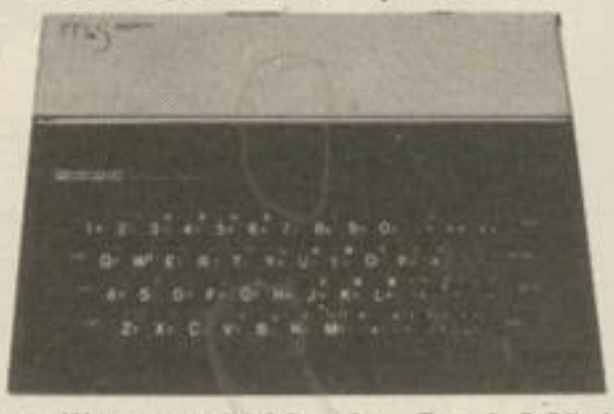
I am offering a special bonus to those of you who buy the first four issues. Simply collect the tokens printed each week, send them to me and you will receive your own LOAD RUNNER SECURITY PASS. The first token is printed below.

This will open the doors to untold adventure. Security pass holders will be first in the queue as we delve into the super-scientific world of computers. I am constantly online to the major forces in the computer world and I intend to make their work more accessible to you.

Remember, it is my task — and that of my programmers and operators — to perform as would a well-designed computer. We will be easy to access, useful to own and fun to play with.

THE CONTROLLER.

Sord M5



Retailing at £189, the Sord M5 is an advanced computer that anyone can operate easily.

Ideal for games playing, it can also be used for keeping household accounts and for bank loan management. It can even handle simple data processing.

The Sord M5 has the following features:

- Typewriter-like keyboard.
- 8K ROM
- 4K RAM
- 16K Video RAM
- Sound generator
- Colour graphics

It can be used with a domestic TV, and is compatible with an ordinary cassette tape recorder.

BUGSY MALONE, always the sharpest of dudes, is right up to the minute with the behind-the-scenes organisation of the West End's new hit musical—he's computer-organised.

The show director, Michael Dolenz, pictured left with Bugsy, uses a Sord home computer to help him arrange the complicated rehearsal schedules as well as maintain a highly-efficient catalogue and easy reference to talented youngsters all over the country. He says:

"I used a Sord both for home and work long before I started on the stage version of *Bugsy Malone* and it has always been invaluable. Since I started working on transferring Bugsy from film to stage it has been like an extra right arm.

"The auditions alone attracted more than 10,000 children and in each cast there are 48 boys and girls. I don't think I could have organised the rehearsal schedules and had anything like a proper system without it."

Sord is the major investor in *Bugsy Malone,* which is receiving standing ovations from capacity audiences at Her Majesty's Theatre. The transfer of Alan Parker's film with splurge guns, pedal-car chases and characters such as Bugsy, Fat Sam, Tallulah, Dandy Dan, Blousey Brown, Fizzy and Knuckles, has been acclaimed as a triumph by adults as well as youngsters.

Competition

TO COINCIDE with the stage version of *Bugsy Malone, Load Runner* is offering three Sord M5 computers, plus free tickets to the show to the winners of this easy-to-do competition. The three first-prize winners will each receive a Sord M5 computer, plus a ticket to a matinee performance of *Bugsy Malone.* The three runners-up will each receive a free ticket to the same performance. Free tickets will also be provided for a parent or guardian to accompany each prizewinner.

All prizewinners will be given a guided tour of the Sord London showrooms, where they will receive hands-on experience of the Sord M5 computer before attending an afternoon performance of *Bugsy Malone.*

Send your entries to:

Bugsy Malone Competition,
Load Runner,
ECC Publications,
30–31, Islington Green,
London N1 8BJ.

to arrive not later than Friday, July 8.

The usual rules of the editor's decision being final, and employees of ECC Publications and of Sord Computers being ineligible, apply.

How to enter

To the right are listed the surnames of several notorious American gangsters. All you have to do is to supply the popular names by which they were known. The first one has already been completed for you.

MACHINE GUN	KELLY
.....	FLOYD
.....	NELSON
.....	LUCIANO
.....	PARKER
.....	BARROW
.....	BARKER

As a tie-break, if one is necessary, complete the following sentence in not more than 12 words:

If I had a Sord M5 I would .....

.....

Name.....

Address .....

.... Age .....

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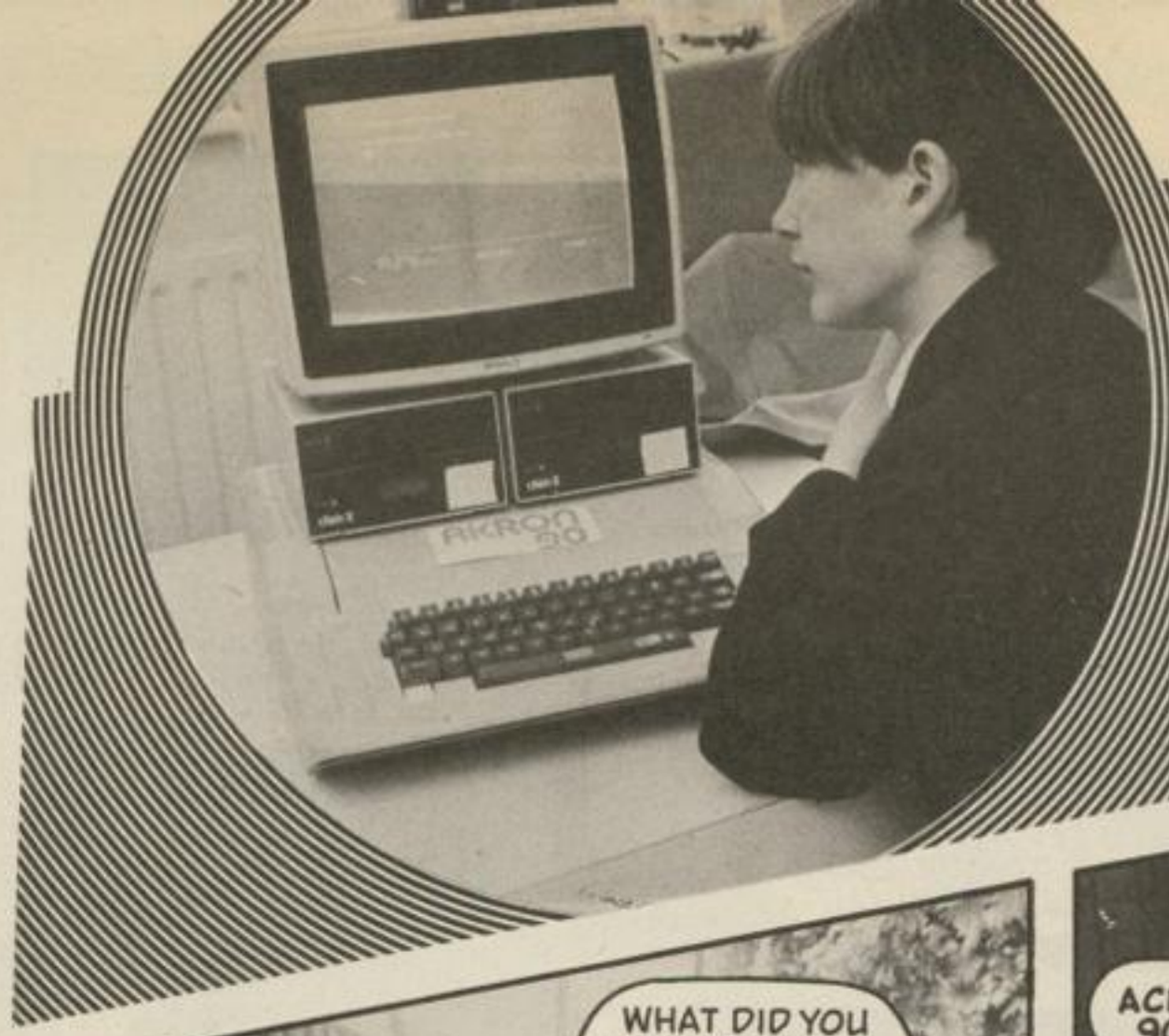
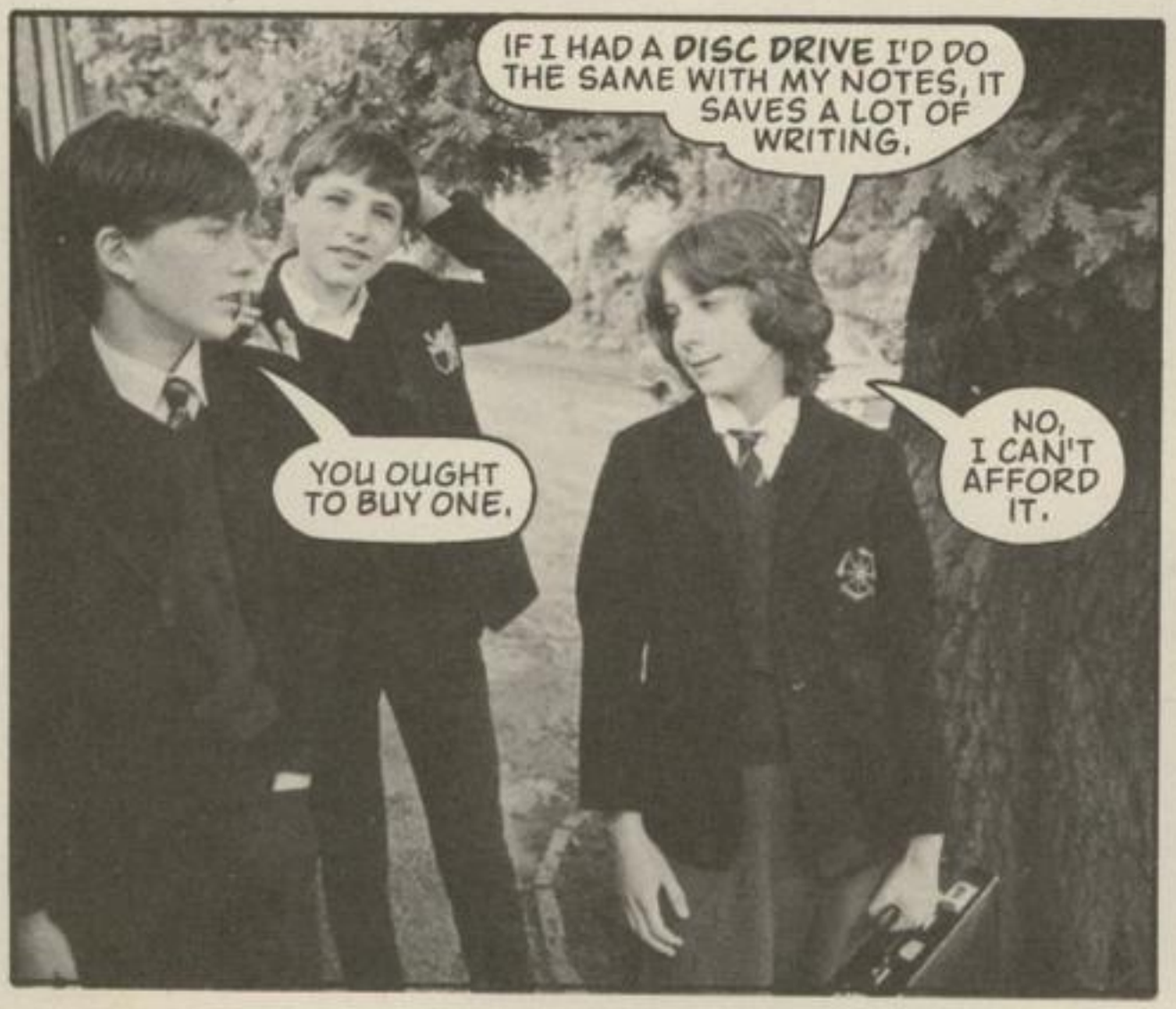
THE PLOT





STORY- FRANK HOPKINS
PHOTOS- HENRY ARDEN
LETTERS- STEVE CRADDOCK

I'M NOT SUPPOSED TO PLAY GAMES ON IT.

MUM AND DAD BOUGHT IT FOR ME SO I COULD **LEARN** THINGS. THEY DON'T REALISE THAT WRITING YOUR OWN **GAME PROGRAM** IS TEN TIMES MORE DIFFICULT THAN COPYING UP NOTES...

IT LOOKS IMPRESSIVE THOUGH, WHEN YOU CALL UP PAGES.

MY DAD ALWAYS SAYS 'INVENTED ANY GAMES WE CAN MAKE ANY MONEY OUT OF, LOVE?'

I'VE ONLY HAD A COMPUTER FOR A MONTH AND HE EXPECTS ME TO BE A **GENIUS!**

THAT'S THE TROUBLE WITH PARENTS... THEY WATCH **TOMORROW'S WORLD** TOO MUCH.

GO ON THEN, LET'S COME AND SEE IT.

NOT NOW, I'VE GOT A FEW... OPERATING DIFFICULTIES TO SORT OUT.

I'LL SHOW YOU WHEN I'VE GOT IT PERFECT.

WHICH MEANS IT'S DUMPING HIS PROG-RAMS AND HE CAN'T WORK OUT WHY.

DUMPING? DUMPING THEM WHERE?

SEE YOU TOMORROW.

I WISH IT WAS AS SIMPLE AS JUST DUMPING. AT LEAST YOU COULD CHECK BACK AND FIND OUT WHERE YOU WERE GOING WRONG. BUT THIS IS FAR MORE **SERIOUS.**

TWENTY MINUTES LATE... THAT MEANS I'LL GET THE OLD 'WHERE HAVE YOU BEEN, PAUL?' ROUTINE.

YOU'RE LATE, PAUL.

YOU HAVEN'T BEEN HANGING AROUND WITH THAT KAREN PATTERSON AGAIN, HAVE YOU?

NO, I HAD TO STAY LATE AT SCHOOL.

WHAT FOR? WHAT DID YOU DO? YOU KNOW I'VE TOLD YOU...

I WAS EXPLAINING ABOUT THE **AKRON** TO DR. HALROYD. HE'S THINKING OF BUYING ONE.

I WAS JUST TELLING HIM THE OPERATIONAL ADVANTAGES. YOU KNOW THE SORT OF THING... 64K MEMORY, DRIVE COMPATABILITY...

YOU NEEDN'T TALK IN THAT COMPUTER JARGON TO ME.

AND THAT REMINDS ME, I WISH YOU'D SWITCH THAT THING OFF WHEN YOU GO OUT.

WHAT?

IT WAS MAKING FUNNY CLICKING NOISES TO ITSELF ALL DAY.

JUST THINK OF THE WASTE OF ELECTRICITY. BECAUSE **I'M** NOT GOING TO SWITCH IT OFF. I HATE THE THING.

I SUPPOSE I'M LUCKY TO HAVE A COMPUTER THIS GOOD.

THAT'S ODD, I'M SURE I TURNED IT OFF. I EVEN UNPLUGGED IT.

IT **IS** UNPLUGGED. WHAT'S SHE GOING ON ABOUT? HOW CAN IT MAKE CLICKING NOISES IF IT'S ***UNPLUGGED?***

NOBODY ELSE HAS GOT ANYTHING AS **SOPHISTICATED.**

THERE IT IS AGAIN, THE **TIME PLAN.** IT'S LIKE SOME WEIRD PROGRAM I'VE NEVER SEEN BEFORE.

BUT WHAT I CAN'T UNDERSTAND IS WHY IT KEEPS ON COMING UP WITH ALL THIS ODD MATERIAL.

*PAUL SWITCHED ON THE **AKRON 90**, AND SAT IN FRONT OF IT. SOMETHING WAS **BOTHERING** HIM.*

TIME PLAN 9

ALL I'VE DONE IS TOUCH TWO BUTTONS AND IT'S COME UP WITH THIS.

IT CAN'T BE A ROM FUNCTION. IT DOESN'T MAKE SENSE.

I CAN'T SEE HOW IT PRODUCES A PROGRAM LIKE THAT WHEN THERE'S NO INPUT SOURCE. IT'S AS THOUGH THE INFORMATION WAS COMING OUT OF THIN AIR.

I DON'T WANT TO HAVE TO TAKE IT BACK TO THE SHOP.

I'D LOOK PRETTY STUPID IF THE FAULT SUDDENLY CORRECTED ITSELF.

AKRON #90

BUT AS PAUL LEFT THE ROOM, THE COMPUTER SUDDENLY FLICKERED INTO LIFE.

TIME PLAN 1 - THE 4TH DIMENSION

435 487 231
321 763 348

21 282 26
344 56 666 879

254 665 66
767 666 55

657 76 333

EVEN THOUGH IT HAD BEEN TURNED OFF, SOME MYSTERIOUS FORCE WAS DRIVING ITS CIRCUITS!

THERE SHOULD BE AN ANSWER IN HERE SOMEWHERE.

OF COURSE, IT COULD BE A ROGUE MODEL. I DIDN'T THINK OF THAT.

AKRON #90

AKRON 90

NEXT ISSUE - THE AKRON 90 HAS MORE SURPRISES IN STORE FOR PAUL AND HIS FRIENDS!

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At the back of the ZX Spectrum the metallic contact strips can be clearly viewed. In the series A the space separating the strips is the same width as the strips. In the series B the strips are twice as wide as the space between.

ME48 Series A £34.50 Series B £23.00

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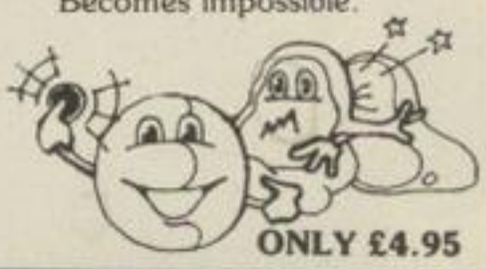

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IT'S THE LAST MATCH OF THE 1993 SEASON - AND RELEGATION LOOMS FOR "DAVY'S DOMINATORS!"

I'D BETTER GET UP TO CONTROL CONSOLE. IF I LOSE TODAY, IT'S THE END FOR THE DOMS!

STORY
CHRIS WINCH
ART
JOHN STOKES
LETTERS
S. CRADDOCK

THE FANS DON'T HOLD OUT MUCH HOPE...

OLD DAVY'S FINGERS HAVE GOT SOME WORK TO DO THIS AFTERNOON!

YEAH, AND THE PAPER SAYS THE BANK WILL FORE-CLOSE IF THEY GO DOWN!

THE DOMS v HARTFORD AZTEC

E STAND

IN THE 1990'S TECHNOLOGICAL ADVANCES HAVE OVERTAKEN EVEN SPORT!

I HOPE MY PLAN WORKS! THE AZTEKS HAVE NOT BEEN BEATEN IN 14 GAMES!

THE MANAGER NOW HAS TOTAL CONTROL OVER HIS PLAYERS... BECAUSE THEY ARE ALL ROBOTS!

THE COMPUTER CONSOLE KEEPS HIM IN CONSTANT CONTACT WITH HIS MECHANICAL TEAM ON THE FIELD...

DAVY'S OPPOSITION MAKES HIS ENTRANCE: HARRY HARTFORD, THE LEAGUE CHAMPION!

HI, DAVY!

YOU'RE GONNA BE LOOKING FOR A NEW JOB WHEN I'VE FIN-ISHED WIPING THE SCREEN WITH YOU!

HELLO, HARRY, WE'LL JUST HAVE TO SEE ABOUT THAT, WON'T WE?

IN THE DOM'S LOCKER ROOM, DAVY'S ROBO-PLAYERS ARE BEING PREPARED FOR ACTION!

'ERE, ALF, I DON'T RECKON SOME OF THESE WILL LAST 90 MINUTES!

YEAH, EVEN IF DAVY DOES PULL IT OFF, WHERE'S HE GONNA GET THE BREAD FOR NEW HARDWARE?

WELL, BERT, WHAT WAS THAT POEM... "INTO THE VALLEY OF DEATH..."?

YEAH... "LOAD THE 600"! HA! HA! FANCY A CUPPA? IT'LL PROBABLY BE THE LAST ONE WE GET ON DOMINATORS TIME!

THE CONTESTANTS ARE READY...

THE STARTER LIGHT TURNS GREEN- THE GAME IS ON!!

AT FIRST, DAVY'S SKILL HOLDS THE **AZTEKS** AT BAY...

...BUT HIS **ROBOPLAYERS** ARE NOT AS **QUICK** TO RESPOND AS THE **AZTEKS** NEWER MODELS...

THEY'RE ONE UP! HARTFORD WILL JUST **DEFEND** FOR THE REST OF THE MATCH!

DAVY HASN'T GOT A **SPARE!** THE DOMS ARE **FINISHED!**

ONE OF YOUR MACHINES IS **DOWN**, DAVY! AND IN TEN MINUTES THE DOMS WILL BE JUST A **MEMORY!**

THIS IS IT - THE **BIGGEST** GAMBLE OF MY **LIFE!**

DAVY'S PLAN IS PUT INTO ACTION...

CRIPES! WHERE'S **THAT** COME FROM? HOW DID DAVY GET ANOTHER ROBOPLAYER?

ANDY ROYD

HARTFORD IS SURPRISED!

SO, DAVY, YOU'VE MANAGED TO GET A SPARE ROBO-PLAYER FROM SOMEWHERE! BUT IT'S NOT GOING TO DO YOU **ANY GOOD**, LITTLE MAN!

JUST PLAY THE GAME, HARRY...

THE NEW ROBOPLAYER **EVENS THE SCORE** WITH FOUR MINUTES TO GO!

THE ROOM IS SUDDENLY BUZZING WITH EXCITE-MENT!

WELL, WELL! **THAT** WAS A NEW MOVE! BUT RE-MEMBER, A DRAW IS **NOT GOOD ENOUGH!**

HE'S RIGHT! AND I'M RUNNING OUT OF TIME!

GOAL! THE **DOMS** ARE **SAVED!**

THE CROWD GO WILD!

DOMS 2 AZTEKS 1

THE DOMS

IT **WORKED!** IT ACTUALLY **WORKED!**

THAT WAS THE **TOUGHEST** TEN MINUTES OF **MY LIFE!**

NEXT ISSUE› ANDY'S SECRET!

Attention Vic 20 Owners

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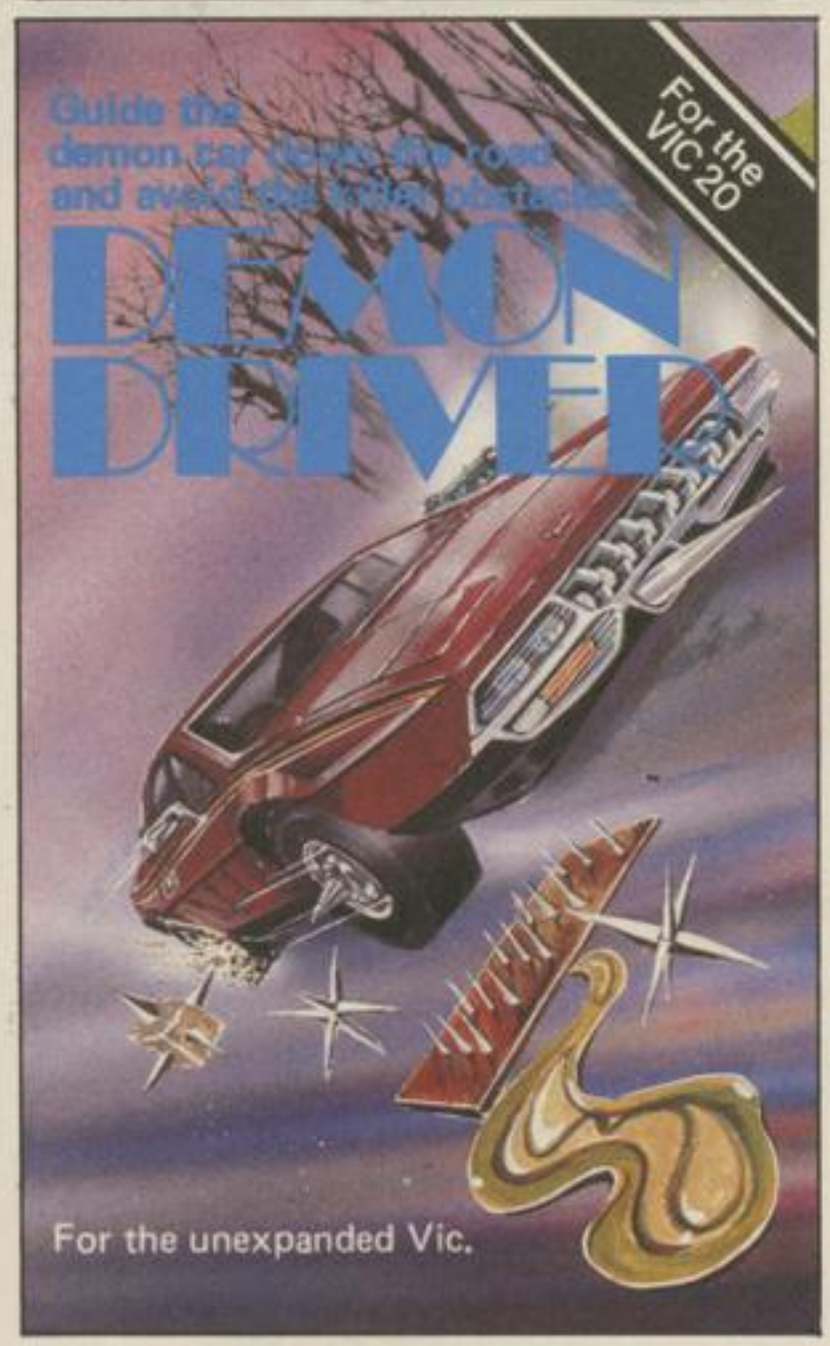

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The Astounding World of Computafax

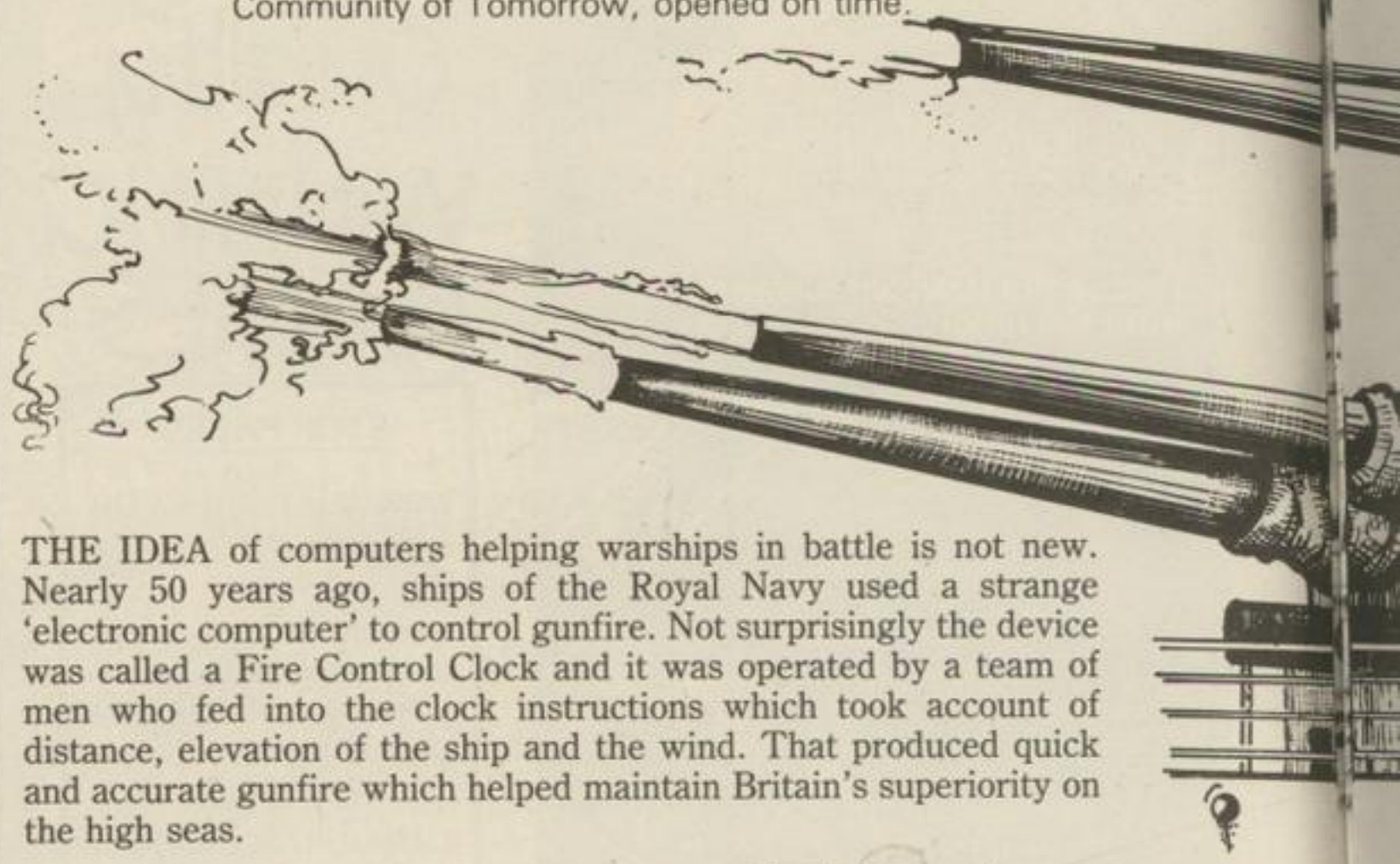
DID YOU KNOW that Walt Disney Productions is one of the biggest users of computers in the world? The one-billion-dollar EPCOT centre at Walt Disney World in central Florida, for example, is not only run by computers—it also makes extensive use of them to provide entertainment.

An amazingly life-like computerised model of Benjamin Franklin even struts across a stage before, unbelievably, walking upstairs.

Walt Disney envisaged EPCOT in great detail as long ago as 1965 but the project did not begin until late 1979.

There is a growing legend at Disney that its then president, Card Walker, told the contracted construction firm that EPCOT had to open, without fail, at 9 o'clock on October 1, 1982. The firm's official replied that it scarcely seemed sufficient time. Card stared at him and said: "How about 9.30?"

EPCOT, which stands for the Experimental Prototype Community of Tomorrow, opened on time.



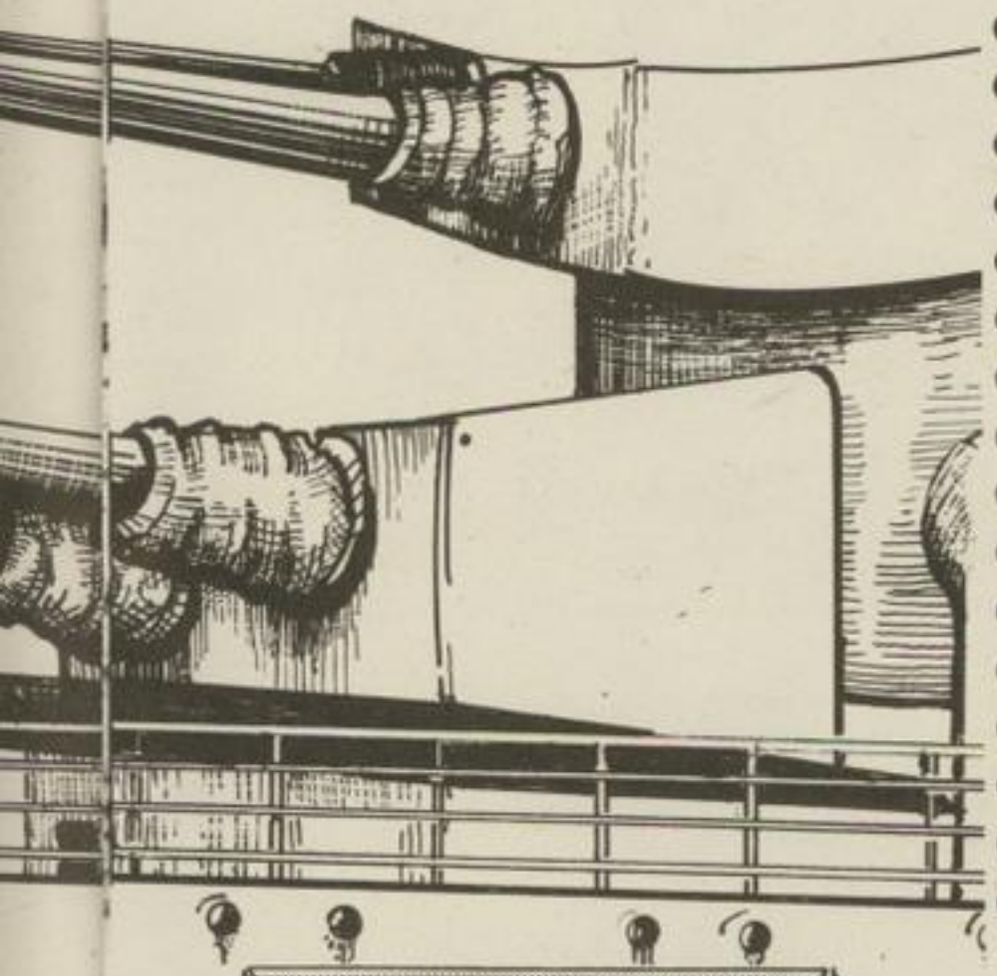
THE IDEA of computers helping warships in battle is not new. Nearly 50 years ago, ships of the Royal Navy used a strange 'electronic computer' to control gunfire. Not surprisingly the device was called a Fire Control Clock and it was operated by a team of men who fed into the clock instructions which took account of distance, elevation of the ship and the wind. That produced quick and accurate gunfire which helped maintain Britain's superiority on the high seas.

COMPUTER ERRORS can be costly. When the Mariner 1 spacecraft was launched from Cape Canaveral at 4.21am on July 22, 1962, its intended mission was to photograph the planet Venus. Unfortunately, a minus sign wrongly-placed in the ground control computer program set off a dynamite charge in the Agena B 100ft. booster rocket 100 miles above the Atlantic, causing it to crash four-and-a-half minutes after blast-off. The cost of that misplaced minus sign—$10 million.

DID YOU KNOW that mice have baffled one of the most sophisticated computer security systems in the world? The Air France computer centre is so top-secret that even French journalists are not permitted to visit it, or reveal its whereabouts.

One of our reporters gained entry for a short visit. He was impressed by the multi-million-pound array of electronic detection equipment which keeps out terrorists but was surprised to note that intruders had already succeeded in getting through the security system. The tell-tale sign at every door was a small pile of mouse poison.

A spokesman for the airline explained: "Nothing in life is perfect but we are safe unless there is a new breed of tiny terrorists".



Are you worried about where your PIXELS are? Do you know when to PEEK and when to POKE? Those words are buzzwords and the jargon of the computer world. They can be very confusing at first. Starting today, *Load Runner* will serialise a glossary of computing terms, beginning with ABORT and running all the way to ZILOG. Get buzzing.

Abort. To stop a computer program if there is an error. The computer will stop performing any work it has been given.

Access time. The time taken by the computer to find a bit of information or a program stored on a cassette tape or on a floppy disc.

Accuracy. The maximum length of a number which a computer can store. Some computers can store only numbers which are eight digits long, such as 12345678, but others can store numbers 10 digits long, 1234567890.

Adapter. A device which will allow two pieces of equipment, such as a joystick and a computer, to be joined so that they can work together.

Add-on. A piece of equipment, such as a joystick or a printer which can be attached to a computer.

Address. The computer needs to know where all the information stored in memory is located. It gives each memory location an address so that it can specify which bit of information it needs by using that address. The address is only a number and usually starts at 0000 and continues upwards. In the same way the Post Office needs a postal address to send you letters.

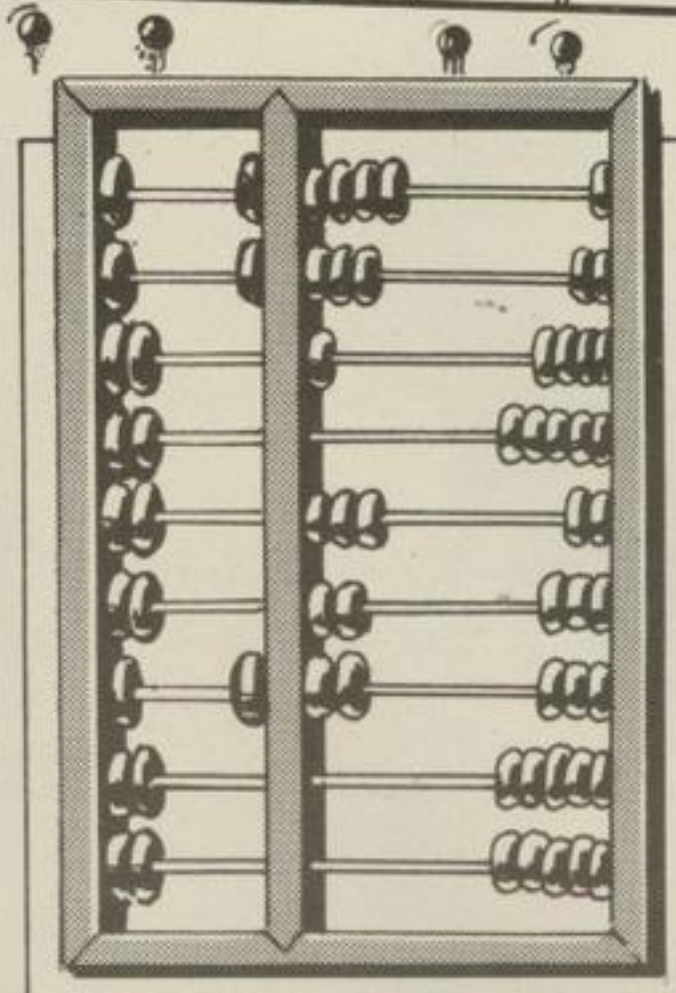
Algorithm. A method of solving a problem. For instance, we may want to know how to add two numbers, 2 and 3. The algorithm we use to find the answer is 2+3.

Alphanumeric. A string of characters, such as AB2CDE4, which contains letters of the alphabet and numbers.

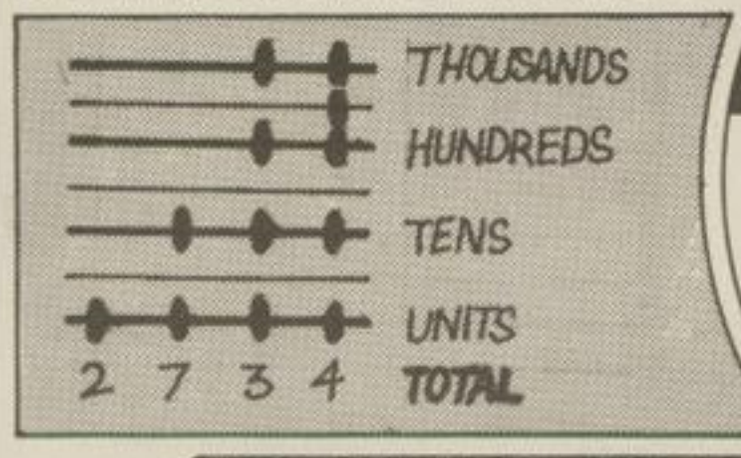
Alu. Arithmetic-Logic Unit. A device in the computer which does all the mathematical calculations, such as adding or division.

Application. A way in which the computer can be used. For instance the games of computer chess and space invaders are two applications.

Architecture. The physical design of the computer. It incorporates the keyboard, the ALU chip, the memory used, and even the keyboard casing.



BELOW – HOW THE ABACUS WORKS. A COUNTER PLACED ON A LINE REPRESENTS "ONE" OF THAT DENOMINATION. COUNTERS PLACED BETWEEN THE LINES REPRESENT "HALF" VALUES – FIVE, FIFTY, FIVE HUNDRED ETC.



THE ABACUS WAS THE EARLIEST SYSTEMATIC AID TO CALCULATION. ORIGINALLY OF STONE, IT DEVELOPED INTO THE WOODEN COUNTING TABLES (RIGHT) USED IN EUROPE TIL THE 16TH. CENTURY. THE BEST-KNOWN FORM OF ABACUS IS THE COUNTING FRAME (ABOVE). USED IN CHINA OVER 5,000 YEARS AGO, IT'S STILL USED IN MANY PARTS OF THE WORLD TODAY.

A SKILLED PERSON CAN CALCULATE VERY FAST WITH AN ABACUS. IN 1946 A JAPANESE CLERK NAMED KIYOSHI MATSUZAKI USED AN ABACUS AND WON A COMPETITION AGAINST AN ELECTRIC CALCULATOR.

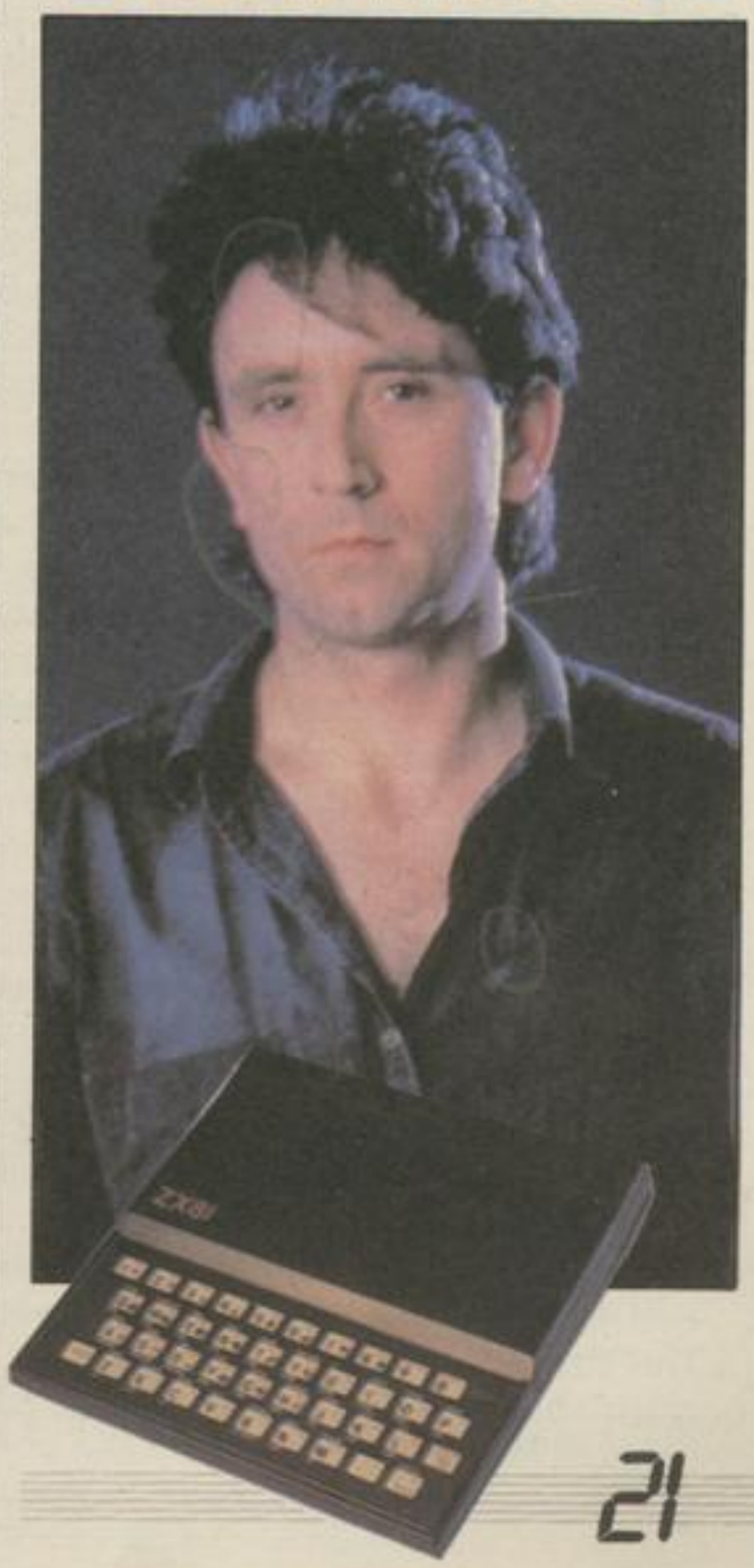
ULTRAVOX has been experimenting successfully with electronic music for almost a decade and has a string of hit singles and albums to show for it. Recently Chris Cross, pictured here below, who has played bass and keyboards with the band since it first got together, decided to do some leisurely experimenting of his own with a Sinclair ZX-81 personal computer.

Though critical of the ZX-81 keyboard, Chris was nevertheless impressed with it as a quick introduction to computing. "It has an element of fun to it, it's for real, but it's also a toy, which makes it very accessible; and, of course, it's cheap."

Zapping aliens and exploring dank dungeons in the brief moments snatched between recording in the studios and touring overseas, Chris has quickly become a dedicated computer fan and now plans to replace his trusty Sinclair with something much bigger, possibly a BBC micro.

Meanwhile Ultravox, too, moves from strength to strength and its new album, *Rage in Eden,* is sure to re-affirm its position as "Britain's premier electronic band".

ULTRAVOX



COUNT DOWN TO CHAOS

by Philip Steele

"I don't believe it", he spluttered.

There was no one to see the light-show close at hand. In the vast emptiness of space there was simply a great flare of white light in the blackness—gas and dust particles wheeling through the solar system, trailing a long misty tail.

The comet was spotted from Earth, of course; the first reports were from Australia. As the light grew brighter it was clear that the comet would pass very close to Earth. Experts argued how close was close. Some people said it would result in a year of rain and bad weather. Well, in Britain that was nothing unusual and soon the subject was forgotten.

As the comet drew close to Earth, it exerted an extraordinary, powerful influence; not on the weather—there were no storms or hurricanes; not on humans—although millions of humans were to suffer tragically. The reaction took place deep in the ancient rocks of the Earth. How it happened was never really discovered but it was the comet which triggered off the bacteria, there could be little doubt about that. . .

It was a day like any other. To start, Ellie overslept and blamed Joe for not waking her earlier. Dad burned the toast and then hid behind his newspaper at the breakfast table.

"What's going on out there in the world, then?" Joe asked him, scraping at his burnt offering.

"Umph?". The usual response.

"I said what's in the newspaper, dad?".

"Oh, the usual. Rovers heading for the fourth division. The Prime Minister thinks he's got problems. A new space shuttle flight. Some comet's about to engulf the world in flames".

"What?" said Ellie.

"A comet. Well, of course, it's not actually going to hit us. Or set us ablaze. But they say it's passing very close". Dad gulped at his tea.

"Now, in the old days that would have been taken as a proof of the end of the world or some kind of disaster. People thought comets were signals from the gods. Now we know they're just great splodges of gas shooting through space".

> As the light grew brighter it was clear that the comet would pass very close to Earth.

"What are you on about now?" interrupted Mum, going through the door with a pile of washing. "Are you going in for Mastermind or something? Or are you going

to be the first British spaceman? Spacemen probably get better pay than car workers—you should apply for a government re-training scheme. Oh, well. If you're so clever, perhaps you could tell me why the washing machine has gone crazy. It's been washing away all night—Joe's football shirt has shrunk to nothing".

"Oh, no", wailed Joe. "It's the match this afternoon".

"Well, it's not my fault", said Mum. "You'll just have to borrow a shirt".

A flurry of barking from the hall drowned Joe's complaints as the dog welcomed the postman in the usual way. Ellie went to fetch the post and threw two letters on the table. Dad wiped the marmalade from the postmark and opened them.

"I don't believe it", he spluttered.

"We've won the pools?" asked Mum sarcastically.

"As good as. There's an extra grand on my bank statement this month. One thousand pounds. Oh, I suppose the bank will find their mistake soon enough. What's this?" he exclaimed as he opened the second envelope. "An electricity bill for £79,000? What's going on? Damned computers. They never get a thing right. I'll have to phone now".

"It's not the fault of computers, dad", said Ellie. "A computer is only as good or bad as its program and programming is still done by humans. Computers are really useful; think where you'd be at work without computers. They design your cars, they even build them. Soon we'll all have computerised robots in the house and none of us will have to bother about household chores again".

"Some of us don't bother very much already", said Dad. "Off to school with you".

'How was the match?" Ellie met Joe on the top of the bus on the way home. It had been a hard day.

"Oh, we won 2—0. I had to borrow Fatso's shirt. I looked dead stupid".

"We had a really weird day", said Ellie. "It was the maths test; right. Old Crabtree said we could use our calculators for questions five and six but none of them would work—mine kept multiplying instead of dividing. He said we'd all have to use long division but none of us could remember how to do it.

"Crabby went on and on about how in his day people had to use their brains and all that rubbish. Then this afternoon we were working on the computer with Miss

"What's going on, Joe? Hasn't anyone else noticed? The computers have all gone crazy".

Macrombie. I made some mistakes and got a real earful from her but she wasn't any better—she had a go and the whole VDU went beserk".

"Trouble is", said Joe, "we both go to a lousy, penny-pinching dump of a school. Nothing ever works. What's the time, anyway?"

"Dunno. That's funny, my watch has stopped. My brand new super digital waterproof shockproof . . ."

"Oh, shut up", said Joe "The point is we're late. This traffic's a mess".

"It's the traffic lights", said the conductor. "On the blink. All over town",

"Joe", said Ellie. "I think I've just had a funny idea".

"Sure you have", said Joe.

"Look—these things breaking down at school. They're all electronic gadgets, right? And my watch?"

"Hey, that's right", said Joe. "And isn't traffic flow controlled by computer? And remember the washing machine at home? And Dad's post this morning?"

"What's going on, Joe? Hasn't anyone else noticed? The computers have all gone crazy".

Joe and Ellie left the bus to the traffic jam and began to walk home. Suddenly they bumped into their father walking in the other direction.

"Back from work already?" chorused Joe and Ellie.

"Bad trouble at work", said Dad. "Been off since lunch. Total shut-down. Going back to lock up now". He hurried off into the crowds.

Joe looked at Ellie and shook his head. "Oh Ell, I just don't like the sound of all this", he said. "Not one little bit".

CONTINUED IN NEXT ISSUE!

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THE ADVENTURES OF ROM AND RAM

THE GREAT PIXEL, RULER OF ZILLYKON CALLS A MEETING OF HIS GENERALS...

MY FRIENDS, **DISTURBING** REPORTS ARE REACHING US FROM EARTH!

THE EARTHLINGS ARE PLAYING MORE AND MORE **COMPUTER GAMES**! AND SOME OF THEIR ARMIES LOOK JUST LIKE **OURS**!

WE THINK THEY MAY BE TRAINING TO **INVADE** US! WE MUST SEND ASTRONAUTS TO **FIND OUT!**

WHICH IS HOW ROM AND RAM FIND THEMSELVES BOUND FOR EARTH.

YECCH! THESE IN-FLIGHT MEALS ARE **AWFUL!** WHAT'S ON THE MENU WHEN WE TOUCH DOWN?

HARD TO SAY! THE **GOOD CHIP GUIDE** SAYS EARTHLINGS PLAY WITH THEIR FOOD, BUT NEVER GET AROUND TO EATING IT...

SOME TIME LATER...

WOW! OBVIOUSLY INTELLIGENT LIFE FORMS!

THOSE ARE **GNOMES**, RAM, **HUMANOIDS** ARE NOT NEARLY SO **HANDSOME**...

DUNLAPPIN'

TOUCH DOWN!

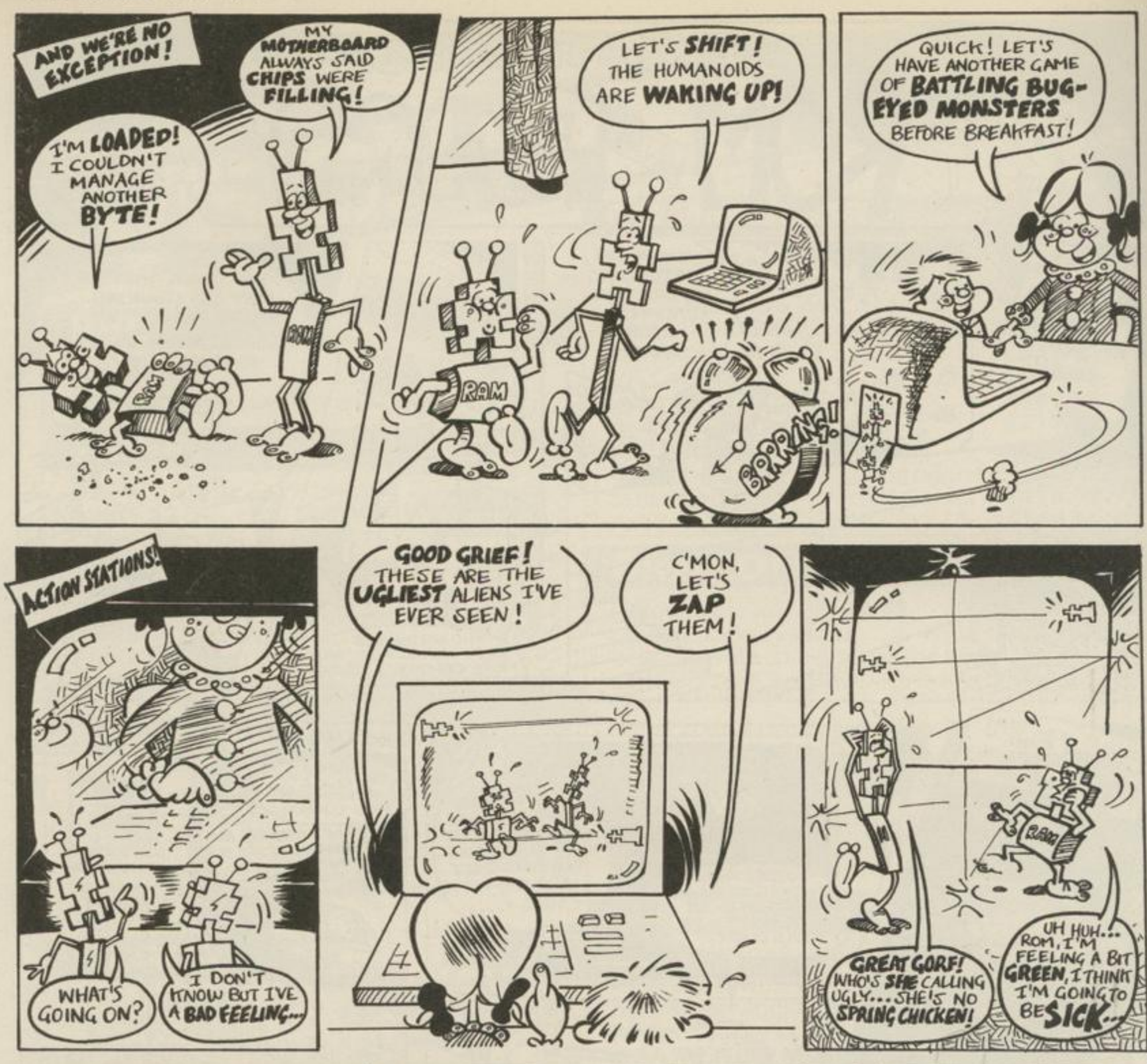
FIRST, THE **REAL** COMPUTER MUST BE REMOVED...

OK RAM, GET YOUR LAUGHING GEAR AROUND **THAT!**

READERS! LESSER MORTALS WOULD USE THIS EPISODE AS AN EXCUSE FOR A STRING OF GHASTLY COMPUTER PUNS...

CHOMP! CHOMP!

ROM & RÄM

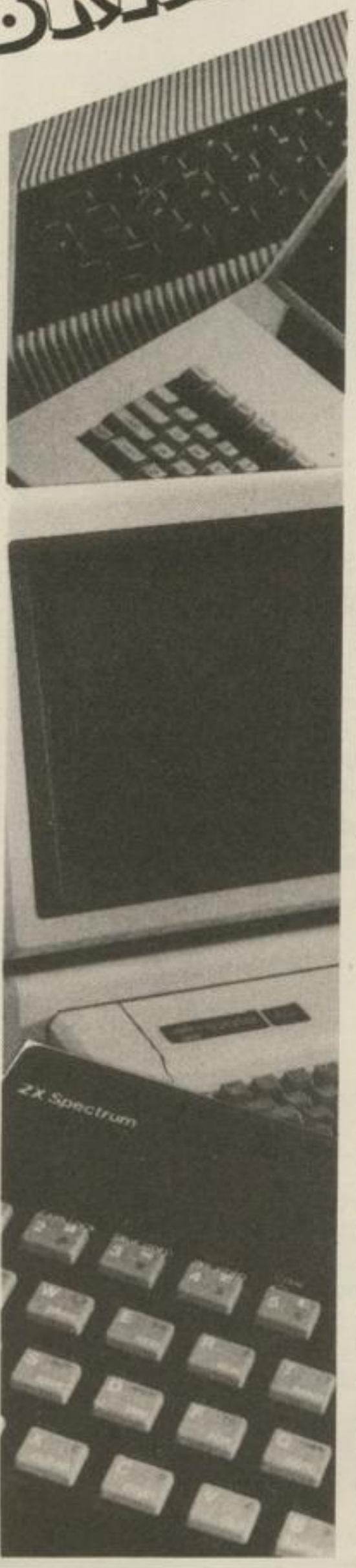

AND WE'RE NO EXCEPTION!
MY MOTHERBOARD ALWAYS SAID CHIPS WERE FILLING!
I'M LOADED! I COULDN'T MANAGE ANOTHER BYTE!
ROM
RAM
LET'S SHIFT! THE HUMANOIDS ARE WAKING UP!
BRRRING!
QUICK! LET'S HAVE ANOTHER GAME OF BATTLING BUG-EYED MONSTERS BEFORE BREAKFAST!
ACTION STATIONS!
WHAT'S GOING ON?
I DON'T KNOW BUT IVE A BAD FEELING...
GOOD GRIEF! THESE ARE THE UGLIEST ALIENS I'VE EVER SEEN!
C'MON, LET'S ZAP THEM!
GREAT GORF! WHO'S SHE CALLING UGLY... SHE'S NO SPRING CHICKEN!
UH HUH... ROM, I'M FEELING A BIT GREEN, I THINK I'M GOING TO BE SICK...
AARGH! WHAT'S THAT? LOOKS LIKE SOME KIND OF SPLURGE BOMB! IT'S COVERED THE LASERS COMPLETELY!
HUMPH! MIGHT AS WELL GIVE UP!
THAT'S ANOTHER FINE MESS YOU'VE GOT ME INTO!
LET'S HAVE ANOTHER GAME THIS EVENING!
ANDY ROBB
MORE ADVENTURES WITH ROM AND RAM NEXT ISSUE!

BRAINY'S BRAINBOX

HI ! I'M BRAINY and I really rate computers. The biggest problem is buying the right one, so here's the first of my Brainbox guides.

I'm going to be a Load Runner every issue so write to me at 30–31 Islington Green, London N1 and I'll do my best to answer any questions you have. Believe me, no problem is too small . . . I can tell you why you should convince your dad to invest in a computer or I can end your Loading problems.

Remember, Brainy's the name and, by the way, I will pay £1 to anyone who's name is mentioned. Write away!



Choosing a Computer

AS WITH most things, the choice of which home computer to buy depends on the use. If you wished to play World Cup Soccer, you would not buy a cheap plastic ball. Similarly if you want to play games which are as good as those in the arcades there is no point in buying a ZX-81, the cheapest computer.

Before looking at any of the ever-increasing number of machines, it is best to take a pen and paper and write what you expect from your computer. Things which are usually important are how easy it is to use—does it have a simple keyboard? Can it be programmed easily? What software is available and what is the cost?

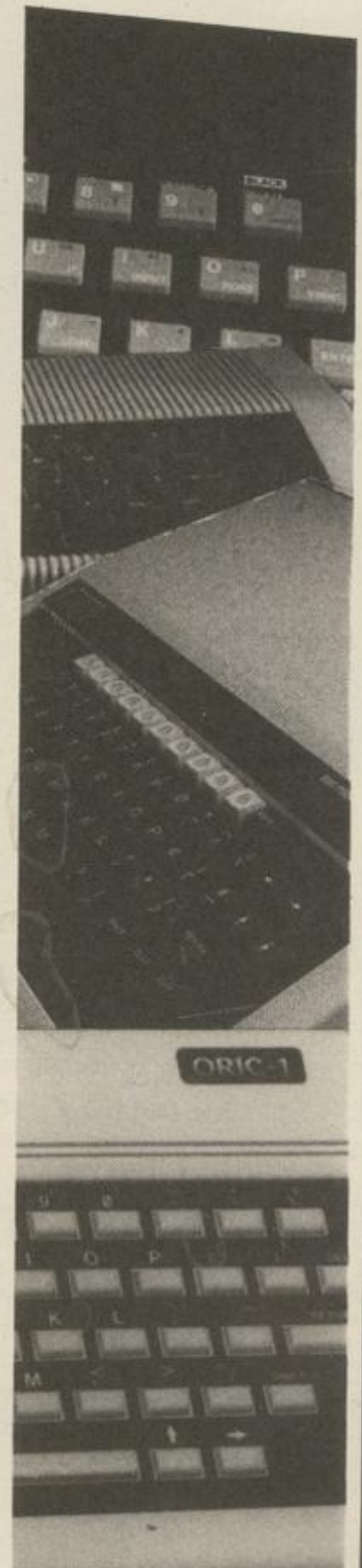
Against that look at what the computers have to offer. As a rough guide the more memory a machine has the better, and the more expensive it is the better it is. For example, a 1K ZX-81 costing less than £50 does not have the same abilities as a 16K Oric or Spectrum costing less than £100. Neither of those is as good as the BBC Model B computer which costs almost £400.

There are, however, a number of machines costing less than £200 which have broadly similar capabilities and it is for you to decide which suits you best. Features which most people find important are ease of loading pre-recorded cassettes, quality of colour and graphics, and the amount of software and hardware support available.

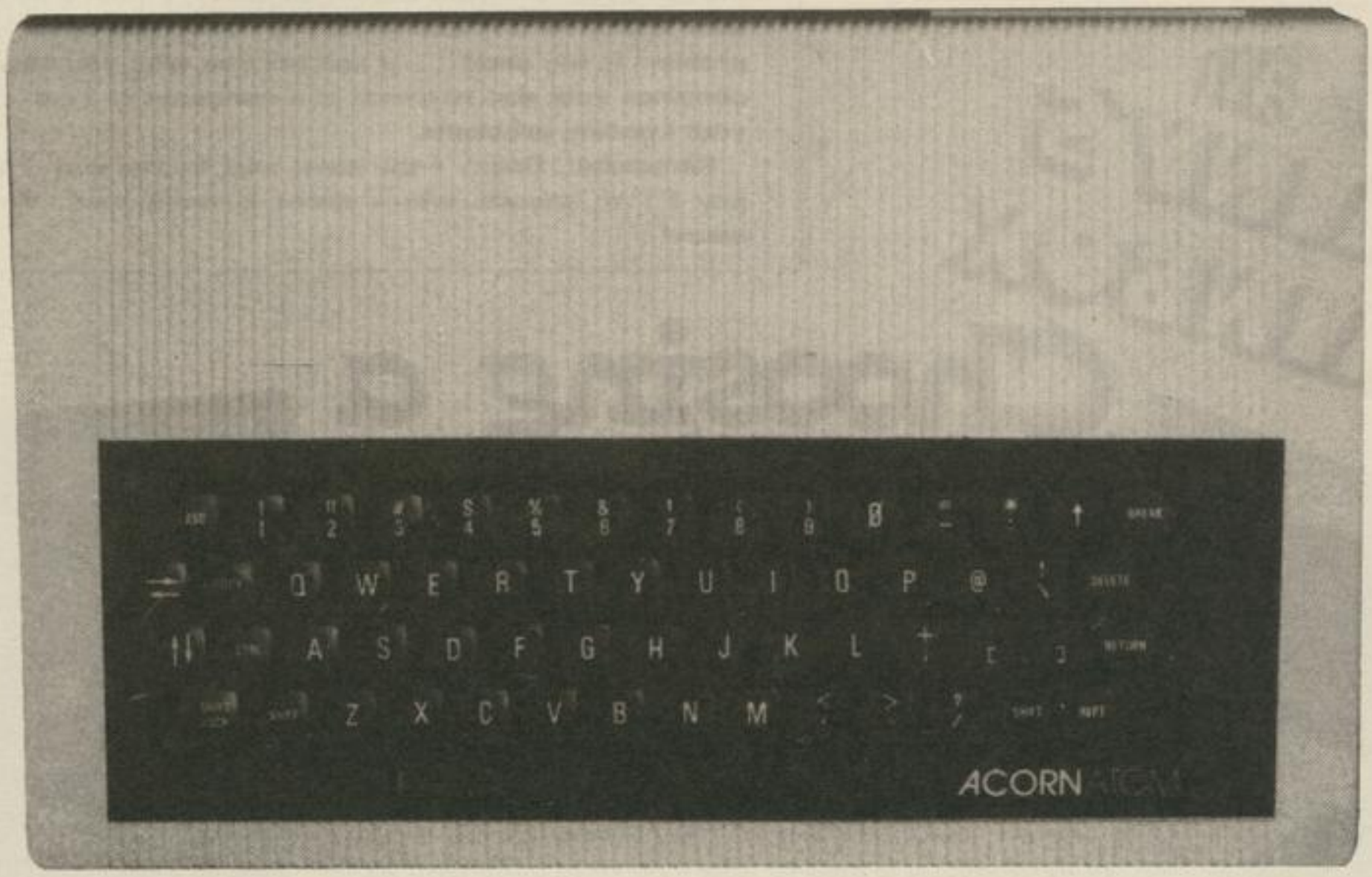
If all that seems a little vague, it must be because of the great range of uses people make of their computers. At one end there is the person who knows nothing about computers and wants to learn a little about what they can do but does not want to play games or put an entire collection of records on file.

The basic 1K ZX-81 would be perfect for that person. Its keyboard can be difficult to use, its graphics are poor and it has a limited memory, but it is still a computer. At the other end of the scale there is the person who runs a small business and wishes to play arcade-quality games for whom an Apple II or Commodore Vic would be the answer.

Once you have done all that, make a list of your preferences. Because you think a machine is perfect for you does not mean that you can go to the nearest electrical shop and buy one. You may have to wait, so be prepared to accept something less than ideal for the benefit of taking it home immediately.



Acorn Atom



Price	**kit**	**£120**
	assembled	**£150**
Numbers sold		**25,000–30,000**
How sold		**kit/assembled**
Processor		**6502**
Standard RAM		**2K**
Expansion RAM	**internal**	**12K**
	external	**32K**
BASIC + operating system		**8Kin ROM**
Display	**black/white**	**16 lines × 32 characters**
Tape recorder		**Any cassette recorder**
Backing storage		**Disc drives**

SOFTWARE

Acornsoft, 4A Market Hill, Cambridge
A + F Software, 830 The Hyde, Manchester, M1870

BOOKS

Time Data Ltd., 16 Hemmels, Laindon, Basildon, Essex.

COMMENTS:

The Atom was one of the first small computers to have a typewriter keyboard. It is the predecessor of the BBC microcomputer and can run BBC BASIC if an upgrade kit is bought. This kit can be found at most Acorn stockists.

Unfortunately the Atom is a black and white display computer and an upgrade kit is required. This comes in the form of a colour board.

The machine is to be withdrawn in September when production stops. Books and software will still be sold and those who own an Atom should still be able to find information on their machines from computer magazines and comics.

ACORN COMPUTERS
4A Market Hill,
Cambridge.
Tel: 0223 245200

TRUMBULL'S WORLD

THIS IS A WORLD. IT IS A WORLD OF BEAUTY AND WONDER... A WORLD OF LIGHT. IT IS CALLED...

IT IS **NOT** THE REAL WORLD.

SCRIPT— ROB BEATTIE
ARTWORK— MALCOLM STOKES
LETTERS— STEVE POTTER

NO, **THIS** IS THE REAL WORLD. THERE IS NO WAR. THERE IS NO **ESCAPE**.

DON'T **PUSH** ME!! WHY ARE YOU **PUSHING?**

GET OUT! YOU DON'T BELONG HERE!

PROGRAMMER TRUMBULL SITS AT **CENTRAL CONTROL.**

SIGNING OFF TO SYSTEM, CODE FOR TRUM. 6711e.

WONDERING IF HE SHOULD TELL THE WORLD...

I **MUST** TELL THEM. IT WILL GIVE HOPE TO THE **MILLIONS** WHO LIVE IN THE CITY.

...TO THE OVERCROWDED **BILLIONS** ALL OVER THE **WORLD.**

MEANWHILE... IN THE GOVERNMENT'S **HALL OF INNOCENTS** THERE IS **DISCUSSION...**

SO, IT IS AGREED, WE HAVE APPROVED THE APPOINTMENT OF **CAN** TO WATCH OVER THE TRUMBULL SITUATION.

AGREED.

YES.

YOU HONOUR ME.

ONCE AGAIN, **PROGRAMMER TRUMBULL**, AFTER HIS EXTRA-ORDINARY ANNOUNCEMENT, HAS REFUSED TO COMMENT ON A POSSIBLE DATE OF DISCOVERY. A SPOKESMAN FROM THE **HALL OF INNOCENTS** CLAIMED THAT RESEARCH INTO THE PROJECT HAD BEEN PREPARED, AND FUNDED, BY THE GOVERNMENT. THIS HAS BEEN JILLIAN DEVANT. GOOD MORNING.

*RESPONSE TO **TRUMBULL'S** NEWS IS EXCITED...*

WHY DIDN'T HE SAY WHEN IT'LL BE FINISHED. I THINK WE'VE GOT A **RIGHT** TO KNOW.

IMAGINE BEING ABLE TO JUMP TO ANOTHER **GALAXY!** TO HAVE SPACE TO MOVE, **REALLY** MOVE.

AFTER MONTHS OF WORK, TRUMBULL IS CLOSE TO THE ANSWER...

I'M BEING WATCHED. BUT WHO BY? I'LL HAVE TO BE CAREFUL. PERHAPS I BROKE THE NEWS **TOO SOON!**

THE COUNCIL IS DISPLEASED...

LAN YOUR PROGRESS HAS BEEN SLOW.

SIMIAN I AM WARY OF PUSHING **TRUMBULL** TOO HARD. HE KNOWS THAT WE ARE WATCHING.

NEVERTHELESS, THE WATCH ON **TRUMBULL** MUST BE STEPPED UP. IF HE FINDS THE EQUATION, WE MUST BE THE FIRST TO HIM. **EMES**, HOW ARE THE SYSTEM BREAK PLANS?

IT IS HARD, **SIMIAN; TRUMBULL'S** SYSTEM PROTECTION ROUTINES ARE VERY **COMPLEX.** I NEED MORE TIME IF I AM TO...

*TRUMBULL WORKS ON THE EQUATION THAT WILL **LIBERATE** MANKIND.*

HOW'S IT GOING?

GOODNIGHT.

QUITE WELL, I'VE ISOLATED NEARLY ALL OF THE CO-ORDINATES NOW. IT'S JUST A MATTER OF TIME.

SIMIAN IS IN NO MOOD FOR EXCUSES.

THERE **IS** NO TIME. YOU MUST MAKE ME THE TIME I NEED BY **BREAKING INTO HIS SYSTEM! IS THAT CLEAR?** I MUST HAVE THAT **EQUATION!**

TRUMBULL TRIES TO RELAX...

I NEED A REST. I'LL LOAD THE ADVENTURE PROGRAMME AND WORK ON THAT. IT'LL TAKE MY MIND OFF THINGS...

TRUMBULL RETREATS INTO THE ADVENTURE WORLD THAT HE HAS CREATED...

...A WORLD WHERE HE CAN ESCAPE.

THAT'S BETTER. THIS IS WHAT I NEED. WHAT SHALL I DO NEXT, A MAZE OR ANOTHER RIDDLE?

MEANWHILE THE REAL WORLD WAITS, AND THE WEEKS PASS.

TRUMBULL HEARS THE SOUND OF RUNNING FEET.

...IN THE ADVENTURE WORLD!

I'M TIRED, AND WHAT FOR? DID I DO THIS FOR MY CHILDREN, OR FOR THOSE CREATURES THAT I KNOW ARE WATCHING ME..?

... AND THEY COME FOR ME NOW! WHERE CAN I HIDE IT?

THE DOOR'S LOCKED! USE THE LASERS!

MONTHS LATER, THE EQUATION IS FINALLY COMPLETED.

TRUMBULL'S WORLD

AS THE DOOR IS PEELED OPEN...

NOW TO ENTER THE CODE...

INTEGRATE, DIGITISE, RUN.....

STOP HIM!

NO!

NEARLY THERE... NEARLY...

ENTER

THE CLASP!

THE CLASP BREAKS...

WHERE IS THE EQUATION, TRUMBULL? WHERE IS IT?

ANSWER ME! WHERE IS IT?

...AND TRUMBULL KNOWS IT IS OVER.

YOU ARE TOO LATE... YOU CAN'T USE IT, YOU'LL NEVER GET IT...

I HAVE HIDDEN IT. IT IS SAFE.

NEXT ISSUE: THE ADVENTURE BEGINS...

POP goes the MICRO

THE RECENT LAUNCH of the world's first computer pop discs by EMI and Island Records is an exciting beginning to what might well be a new era for the music and home computer industries.

The EMI-released single has a pop song, *Camouflage,* on side A, and three computer programs for the Sinclair ZX-81 on the B side. If side B is loaded into the computer memory and then the sound on side A is played, the lyrics will be displayed on a TV screen in time with the music. That is not all. Side B also contains two games for the ZX-81, one for the 1K version and one for the 16K.

Camouflage is the brainchild of 27-year-old Chris Sievey, a pioneering figure in the music industry. He has recorded eight albums and 15 singles, all on the independent label Razz Records, and in 1980 was the first to release a full-length pop video film. He has also produced a 3D TV, which was displayed to the public in 1981. He is obviously a musician to watch.

Hot on Sievey's tracks is ex-Buzzcock Pete Shelley with a similar gimmick on his latest LP, *XL1,* distributed by Island Records. It contains a computer program for the Sinclair Spectrum which, when loaded, provides graphics and song lyrics to accompany the music.

What will be the next development in this exciting field? Perhaps a Pac-man game to the tune of *Eat to the Beat* . . . Watch this space.

Chris, computer and Camouflage

THE INVASION OF THE ARCADIANS

ON ANY BIG CITY, ANYWHERE, THERE ARE THE **ARCADES**; FULL OF KIDS PLAYING THE MACHINES THAT TAKE THEM INTO THE INCREDIBLE WORLD OF **VIDEO GAMES**. HARMLESS FUN. WELL, UNTIL...

ASTRO BLASTER

AMUSEMENTS

WELL, WHETHER YOU ORDERED IT OR NOT - 'ERE IT IS, GUV!

A **NEW GAME** IS SUDDENLY DELIVERED TO **EVERY ARCADE** FROM A NEW COMPANY NO ONE HAS EVER HEARD OF BEFORE!

mind warp

I DON'T KNOW WHERE IT CAME FROM, BUT IT'S CERTAINLY A **WINNER**!

SCRIPT — LES COOKMAN
ARTWORK - JOHN STOKES
LETTERS - STEVE CRADDOCK

mind warp IS A SMASH EVERYWHERE! THOUGH A HARD GAME TO BEAT AT FIRST, SOON IT WAS JUST ANOTHER GAME. UNTIL...

...A BOY PLAYING mind warp ON HIS OWN BECOMES AWARE OF SOMETHING STRANGE!

A WEIRD LIGHT FLICKERS FROM DEEP WITHIN THE MACHINE...

A HIGH PITCHED NOTE FILLS HIS EARS- AND HIS MIND!

THE SCREEN FLASHES UP "CLOSER"... AND HE HEARS IT SPEAK!

I MUST OBEY... I WILL OBEY!

HE WRITES TO A BOX NUMBER IN THE CITY TO ORDER A PERSONAL STEREO.

HE DOESN'T KNOW WHY, HE JUST OBEYS!

NOW TO FIND THE FRESH MINDS OF SOME EAGER NORMS!

HEY, ALFIE! I THOUGHT WE WERE HAVING A GAME OF TOAD SQUELCHER LATER!

WHEN HE GETS HIS STEREO (AT NO CHARGE!) HE FINDS LIFE NOW HAS A REASON. HE JUST OBEYS THE STRANGE SIGNALS FROM HIS HEADPHONES!

HE HAS GOT MATES WHO LIKE A GAME...

WANT TO TRY?

YEAH, I DON'T RECKON YOU GUYS COULD BEAT MY TOP SCORE ON MIND WARP.

THIS IS GOING TO BE EASY!

I MUST OBEY... I WILL OBEY!

THERE'S NO DEFENCE!

AROUND THE WORLD, WHEREVER THERE ARE ARCADES...

...mind warp IS DELIVERED, UNORDERED...

...AND HAS THE SAME STRANGE EFFECT!

I'M OFF SKATING WITH SOME MATES- BACK LATER.

YEAH- ALL RIGHT. YOU'VE GOT YOUR KEY- WE MIGHT BE OUT.

THE FEVER SPREADS, THEY'RE CALLED DAZERS, THEY HUNT IN PACKS...

TO TURN ON THEIR NORM PALS TO mind warp, THE ULTIMATE GAME -AFTER ALL, WHAT HAVE THEY GOT TO LOSE...

...OBEY... FIND NORMS ...OBEY...

BUT THEIR MINDS!

THEN- IN AN ALLEY SOMEWHERE IN THE CITY...

...A FIGURE MATERIALISES- BUT FROM WHERE, AND WHY?

TO BE CONTINUED!

Formula One micro driving

Motor racing today is safer and faster

HOW MANY of you know that computers are now used by almost all the Formula One teams in their bid to beat all comers in the gruelling World Championship?

In this issue we feature the John Player Special Lotus, seven times world champions and maker of one of England's leading sports cars. This year it is using a 1,500cc turbo-charged Renault engine which will power its number one English driver Nigel Mansell to speeds of more than 200mph.

In the car, pictured below, a computer is fitted. It gathers information on the engine performance, recording oil pressure, temperature, fuel consumption and, most important, controls the cutting-in and out of the turbo.

It also monitors the complicated hydraulic suspension system and relays all its information instantly to a Hewlett-Packard 82 computer in the pits. That means the race manager can detect anything which is about to go wrong before it happens and can quickly call in the car.

That makes racing safer and more efficient. Before computers were used, many races were lost on the last lap by the leader running out of fuel and several drivers have crashed through suspension failure.

A Hewlett-Packard 98/85 is used to help make car models for future designs. It collects data from wind-tunnel tests to ensure perfect streamlining and to produce minimum drag. It also measures the weight of air crammed down on to the rear wheels by the spoilers.

Right: Nigel Mansell driving the computer car at Long Beach, California in March this year.

The latest for Sinclair, Vic-20 and TI99/4a owners – at unbeatable prices!

The newest games like Carwars . . . Blasto . . . Pitman 7 and many more take their place this month in our lists! Remember we search for brilliant new program sources throughout the U.K. and North America to find an exciting collection of new games — and business programs — many of which cannot be bought by mail order from any other source!

Every month, we'll be adding to our catalogue to bring you the best of new games, new business, educational and household software.

With our special new deal — you just CAN'T GO WRONG.

* A free offer every month [this time it's a free blank C20 cassette with every two games ordered]
* A replacement guarantee if you're not entirely satisfied with your purchase — that's how confident we are about the quality and value!

All you have to do is look at our new HOT selection, then order quickly to be among the first to own these games of skill, intelligence and excitement [fast delivery is another of our specialities].

FREE BLANK C20 COMPUTER CASSETTE WITH EVERY TWO CASSETTES YOU ORDER!

Remember there's no limit to the number of free cassettes you receive if your order justifies them — so why not get together with friends or user group members and share the freebies?

GUARANTEE

Order with complete confidence. If you are not entirely satisfied with the quality of your purchase return it to us within 7 days and we will provide a replacement.

GREAT VALUE! TREMENDOUS SELECTION! PLUS A FREE OFFER EVERY TIME!

Fill in the order form right away — we're guaranteeing fast delivery, quality and satisfaction [after all, we want you to come back for more!]

The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

Now we've got a NEW selection for VIC 20 and Texas Instruments computers – as well as Sinclair!

TI (99/4a) Software

TI-01 **Number Magic** — **£15.95**
For the mathematically talented

TI-02 **Carwars** — **£21.95**
Fasten your seatbelt — it's a rough ride!

TI-03 **Alligator Mix** — **£27.95**
Watch those teeth . . .

TI-04 **Blasto** — **£21.95**
Explosive fun!

Vic 20 Software

CV-01 **Paratroopers** — **£5.95**
Your chance to be a hero

CV-02 **Cyclons** — **£5.95**
Just you and your skill against mighty forces

CV-11 **Sheer panic** — **£6.95**
But you keep your cool while others run for cover

CV-12 **Pitman 7** — **£6.95**
Pit your experience against this challenge!

ZX81 Software

1-01 **Stock Market** — **£3.95**
Buy and sell your way to millions! 16K RAM

1-02 **Football League** — **£3.95**
First division fun for the soccer enthusiast. 16K RAM

1-03 **Test Match** — **£3.95**
Match your wits alongside the superstars. 16K RAM

1-11 **Arcade Action** — **£4.95**
Overtaker/Missile Man/Space Fighter/ Pilot/Greedy Gobbler/Extra Terrestrial. 1K

1-12 **Avenger** — **£4.95**
Avoid missiles and bombs to become the ruler. 16K RAM

1-13 **Protector**
Defend your own ship from oncoming attackers. 16K RAM — **£4.95**

Spectrum Software

2-12 **Avenger** — **£4.95**
(See 1-12 under ZX81). 48K RAM

2-13 **Sentinel** — **£4.95**
Guard your mother ship against alien attacks. 48K RAM

2-14 **Meteor Storm** — **£4.95**
Spectrum version of the ever-popular arcade game. 16K or 48K RAM

2-15 **Star Trek** — **£4.95**
Popular space program brought to life by excellent graphics. 48K RAM

2-21 **Frogger** — **£5.95**
Manoeuvre the frog across the road avoiding heavy traffic. 48K RAM

2-22 **Crazy Balloons** — **£5.95**
Guide the balloons round the maze without bursting. 48K RAM

2-23 **Arcadia** — **£5.95**
The expert's version of the popular 'Invaders' game. 16K or 48K RAM

2-24 **Golf** — **£5.95**
The finest of golf handicap games. 48K RAM

2-25 **Test Match** — **£5.95**
More exciting than the real thing! 48K RAM

2-26 **Derby Day** — **£5.95**
This favourite has to be a winner. 48K RAM

2-27 **Rescue** — **£5.95**
Rescue the Princess from marauding patrols. 48K RAM

2-28 **The Orb** — **£5.95**
Discover the Orb in the depths of the temple but watch the monsters. 48K RAM

2-29 **Jackpot** — **£5.95**
The harmless way to take on the one-armed bandit. 48K RAM

To: The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

I wish to order the following programs. I understand that:

* I will receive a FREE blank cassette with every 2 programs ordered
* I can return products within seven days if not entirely satisfied and receive a replacement to the same value.

Ref No	Qty	Title	Price

Postage, packing and handling: add 45p for the first cassette, and 25p for each additional cassette. Non-UK orders add extra 50%

Total

I enclose a cheque/postal order for _____

Name _____

Address _____

_____

(Allow 28 days MAXIMUM FOR DELIVERY)

COMPUTATIONS

TRACE the computer terms located in this screenful of computer data. To give you a clue, there are six to find and one of them can also be found in the explanation. Also one word is repeated. Which is it?

D F D P E S E D A
F L O T I N P U T
L X K A T R T A Y
E Z S M H A O E D
T R A C E N R B R
T U P N I R U N D
B D P T T E D Y L

IT TAKES a computer three minutes to execute 75 instructions using the Z-80 microprocessor chip at its heart. How long will it take to process 255 instructions?

THE LETTERS below were scrambled when we tried to print them with our printer. Can you find the four computer-related terms by re-arranging the letters of each string of characters? One of the items does not relate to computers. Which one?

SCASCE

UTIPN

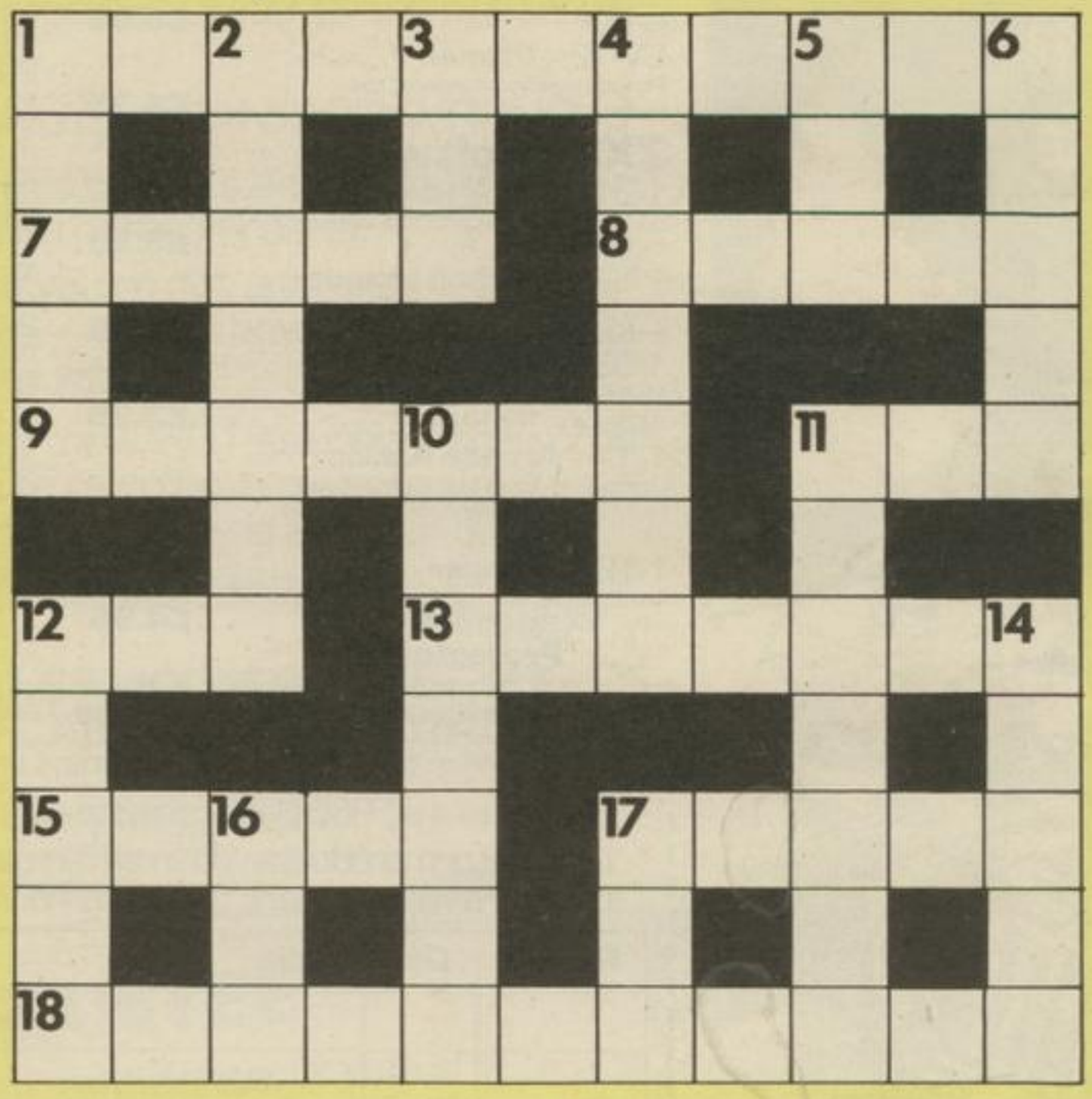
TOCUREPM

WDARER

ODLA

Answers in next issue

Wordplotter



Across

1. Readers of the first computer comic? (4,7)
7. Professional product of graphics system, I guess (5)
8. Tiny start to your treasure (5)
9. Jails for machines which overheat (7)
11. Article in another place (3)
12. Lettuce in the function list (3)
13. Gently stroke bird for a pretty display (7)
15. Go in for a carriage return (5)
17. Cheeky metal, perhaps (5)
18. What commercial users do to get computers (4,7)

Down

1. Lump of wood on a chip for the basis of computer action (5)
2. Things compared to non-digital computers (7)
3. American cheer in a program further ahead (3)
4. What the programmer first does to a new variable (5,2)
5. A common market (3)
6. American shop for micro data (5)
10. Sends overseas from input/output sockets (7)
11. Young ones' category (7)
12. Crystal-like instruction to get ready (5)
14. Loops inside others make pads for birds (5)
16. Touch of the sun is a function (3)
17. Public transport path for data (3)

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